

**RAW SEQUENCE LISTING**

EF.S

The Biotechnology Systems Branch of the Scientific and Technical  
Information Center (STIC) no errors detected.

Application Serial Number: 10/072,622B

Source: FW/b

Date Processed by STIC: 2/21/07

***ENTERED***

## CRF Errors Edited by the STIC Systems Branch

Serial Number: 10/072,622B

CRF Edit Date: 2/21/07  
Edited by: WJ

\_\_\_ Realigned nucleic acid/amino acid numbers/text in cases where the sequence text "wrapped" to the next line

J Corrected the SEQ ID NO. Sequence numbers edited were:  
43

\_\_\_ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:

\_\_\_\_\_

\_\_\_ Deleted: \_\_\_ invalid beginning/end-of-file text ; \_\_\_ page numbers

\_\_\_ Inserted mandatory headings/numeric identifiers, specifically:

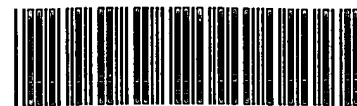
\_\_\_\_\_

\_\_\_ Moved responses to same line as heading/numeric identifier, specifically:

\_\_\_\_\_

\_\_\_ Other:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



IFW16

## RAW SEQUENCE LISTING

DATE: 02/21/2007

PATENT APPLICATION: US/10/072,622B

TIME: 13:55:49

Input Set : N:\efs\02\_20\_07\10072622b\_efs\PTO.AMC.txt

Output Set: N:\CRF4\02212007\J072622B.raw

```

4 <110> APPLICANT: Chen, Lieping
5      Bajorath, Jorgen
7 <120> TITLE OF INVENTION: ICOS Mutants
9 <130> FILE REFERENCE: 07039-331001
11 <140> CURRENT APPLICATION NUMBER: US 10/072,622B
12 <141> CURRENT FILING DATE: 2002-02-07
14 <160> NUMBER OF SEQ ID NOS: 43
16 <170> SOFTWARE: FastSEQ for Windows Version 4.0
18 <210> SEQ ID NO: 1
19 <211> LENGTH: 118
20 <212> TYPE: PRT
21 <213> ORGANISM: Mus musculus
23 <400> SEQUENCE: 1
24 Val Thr Gln Pro Ser Val Val Leu Ala Ser Ser His Gly Val Ala Ser
25 1      5      10      15
26 Phe Pro Cys Glu Tyr Ser Pro Ser His Asn Thr Asp Glu Val Arg Val
27      20      25      30
28 Thr Val Leu Arg Gln Thr Asn Asp Gln Met Thr Glu Val Cys Ala Thr
29      35      40      45
30 Thr Phe Thr Glu Lys Asn Thr Val Gly Phe Leu Asp Tyr Pro Phe Cys
31      50      55      60
32 Ser Gly Thr Phe Asn Glu Ser Arg Val Asn Leu Thr Ile Gln Gly Leu
33 65      70      75      80
34 Arg Ala Val Asp Thr Gly Leu Tyr Leu Cys Lys Val Glu Leu Met Tyr
35      85      90      95
36 Pro Pro Pro Tyr Phe Val Gly Met Gly Asn Gly Thr Gln Ile Tyr Val
37      100     105     110
38 Ile Asp Pro Glu Pro Cys
39      115
41 <210> SEQ ID NO: 2
42 <211> LENGTH: 118
43 <212> TYPE: PRT
44 <213> ORGANISM: Rattus norvegicus
46 <400> SEQUENCE: 2
47 Val Thr Gln Pro Ser Val Val Leu Ala Ser Ser His Gly Val Ala Ser
48 1      5      10      15
49 Phe Pro Cys Glu Tyr Ala Ser Ser His Asn Thr Asp Glu Val Arg Val
50      20      25      30
51 Thr Val Leu Arg Gln Thr Asn Asp Gln Val Thr Glu Val Cys Ala Thr
52      35      40      45
53 Thr Phe Thr Val Lys Asn Thr Leu Gly Phe Leu Asp Asp Pro Phe Cys
54      50      55      60
55 Ser Gly Thr Phe Asn Glu Ser Arg Val Asn Leu Thr Ile Gln Gly Leu

```

## RAW SEQUENCE LISTING

DATE: 02/21/2007

PATENT APPLICATION: US/10/072,622B

TIME: 13:55:49

Input Set : N:\efs\02\_20\_07\10072622b\_efs\PTO.AMC.txt

Output Set: N:\CRF4\02212007\J072622B.raw

```

56 65          70          75          80
57 Arg Ala Ala Asp Thr Gly Leu Tyr Phe Cys Lys Val Glu Leu Met Tyr
58          85          90          95
59 Pro Pro Pro Tyr Phe Val Gly Met Gly Asn Gly Thr Gln Ile Tyr Val
60          100          105          110
61 Ile Asp Pro Glu Pro Cys
62          115
64 <210> SEQ ID NO: 3
65 <211> LENGTH: 118
66 <212> TYPE: PRT
67 <213> ORGANISM: Homo sapiens
69 <400> SEQUENCE: 3
70 Val Ala Gln Pro Ala Val Val Leu Ala Ser Ser Arg Gly Ile Ala Ser
71 1          5          10          15
72 Phe Val Cys Glu Tyr Ala Ser Pro Gly Lys Ala Thr Glu Val Arg Val
73          20          25          30
74 Thr Val Leu Arg Gln Ala Asp Ser Gln Val Thr Glu Val Cys Ala Ala
75          35          40          45
76 Thr Tyr Met Met Gly Asn Glu Leu Thr Phe Leu Asp Asp Ser Ile Cys
77          50          55          60
78 Thr Gly Thr Ser Ser Gly Asn Gln Val Asn Leu Thr Ile Gln Gly Leu
79 65          70          75          80
80 Arg Ala Met Asp Thr Gly Leu Tyr Ile Cys Lys Val Glu Leu Met Tyr
81          85          90          95
82 Pro Pro Pro Tyr Tyr Leu Gly Ile Gly Asn Gly Thr Gln Ile Tyr Val
83          100          105          110
84 Ile Asp Pro Glu Pro Cys
85          115
87 <210> SEQ ID NO: 4
88 <211> LENGTH: 118
89 <212> TYPE: PRT
90 <213> ORGANISM: Bos taurus
92 <400> SEQUENCE: 4
93 Val Ser Gln Pro Ala Val Val Leu Ala Ser Ser Arg Gly Val Ala Ser
94 1          5          10          15
95 Phe Val Cys Glu Tyr Ala Ser Ser His Lys Ala Thr Glu Val Arg Val
96          20          25          30
97 Thr Val Leu Arg Gln Ala Asn Ser Gln Met Thr Glu Val Cys Ala Met
98          35          40          45
99 Thr Tyr Thr Val Glu Asn Glu Leu Thr Phe Ile Asp Asp Ser Thr Cys
100          50          55          60
101 Thr Gly Ile Ser His Gly Asn Lys Val Asn Leu Thr Ile Gln Gly Leu
102 65          70          75          80
103 Ser Ala Met Asp Thr Gly Leu Tyr Ile Cys Lys Val Glu Leu Met Tyr
104          85          90          95
105 Pro Pro Pro Tyr Tyr Val Gly Met Gly Asn Gly Thr Gln Ile Tyr Val
106          100          105          110
107 Ile Glu Pro Glu Pro Cys
108          115

```

## RAW SEQUENCE LISTING

DATE: 02/21/2007

PATENT APPLICATION: US/10/072,622B

TIME: 13:55:49

Input Set : N:\efs\02\_20\_07\10072622b\_efs\PTO.AMC.txt

Output Set: N:\CRF4\02212007\J072622B.raw

```

110 <210> SEQ ID NO: 5
111 <211> LENGTH: 119
112 <212> TYPE: PRT
113 <213> ORGANISM: Mus musculus
115 <400> SEQUENCE: 5
116 Val Lys Gln Ser Pro Leu Leu Val Val Asp Ser Asn Glu Val Ser Leu
117 1 5 10 15
118 Ser Cys Arg Tyr Ser Tyr Asn Leu Leu Ala Lys Glu Phe Arg Ala Ser
119 20 25 30
120 Leu Tyr Lys Gly Val Asn Ser Asp Val Glu Val Cys Val Gly Asn Gly
121 35 40 45
122 Asn Phe Thr Tyr Gln Pro Gln Phe Arg Ser Asn Ala Glu Phe Asn Cys
123 50 55 60
124 Asp Gly Asp Phe Asp Asn Glu Thr Val Thr Phe Arg Leu Trp Asn Leu
125 65 70 75 80
126 His Val Asn His Thr Asp Ile Tyr Phe Cys Lys Ile Glu Phe Met Tyr
127 85 90 95
128 Pro Pro Pro Tyr Leu Asp Asn Glu Arg Ser Asn Gly Thr Ile Ile His
129 100 105 110
130 Ile Lys Glu Lys His Leu Cys
131 115
133 <210> SEQ ID NO: 6
134 <211> LENGTH: 119
135 <212> TYPE: PRT
136 <213> ORGANISM: Rattus norvegicus
138 <400> SEQUENCE: 6
139 Val Lys Gln Ser Pro Leu Leu Val Val Asp Asn Asn Glu Val Ser Leu
140 1 5 10 15
141 Ser Cys Arg Tyr Ser Tyr Asn Leu Leu Ala Lys Glu Phe Arg Ala Ser
142 20 25 30
143 Leu Tyr Lys Gly Val Asn Ser Asp Val Glu Val Cys Val Gly Asn Gly
144 35 40 45
145 Asn Phe Thr Tyr Gln Pro Gln Phe Arg Pro Asn Val Gly Phe Asn Cys
146 50 55 60
147 Asp Gly Asn Phe Asp Asn Glu Thr Val Thr Phe Arg Leu Trp Asn Leu
148 65 70 75 80
149 Asp Val Asn His Thr Asp Ile Tyr Phe Cys Lys Ile Glu Val Met Tyr
150 85 90 95
151 Pro Pro Pro Tyr Leu Asp Asn Glu Lys Ser Asn Gly Thr Ile Ile His
152 100 105 110
153 Ile Lys Glu Lys His Leu Cys
154 115
156 <210> SEQ ID NO: 7
157 <211> LENGTH: 119
158 <212> TYPE: PRT
159 <213> ORGANISM: Bos taurus
161 <400> SEQUENCE: 7
162 Val Lys Gln Ser Pro Met Leu Val Val Asn Asn Asn Glu Val Asn Leu
163 1 5 10 15

```

## RAW SEQUENCE LISTING

DATE: 02/21/2007

PATENT APPLICATION: US/10/072,622B

TIME: 13:55:49

Input Set : N:\efs\02\_20\_07\10072622b\_efs\PTO.AMC.txt

Output Set: N:\CRF4\02212007\J072622B.raw

```

164 Ser Cys Lys Tyr Thr Tyr Asn Leu Phe Ser Lys Glu Phe Arg Ala Ser
165      20      25      30
166 Leu Tyr Lys Gly Ala Asp Ser Ala Val Glu Val Cys Val Val Asn Gly
167      35      40      45
168 Asn Phe Ser His Pro His Gln Phe His Ser Thr Thr Gly Phe Asn Cys
169      50      55      60
170 Asp Gly Lys Leu Gly Asn Glu Thr Val Thr Phe Tyr Leu Lys Asn Leu
171 65      70      75      80
172 Tyr Val Asn Gln Thr Asp Ile Tyr Phe Cys Lys Ile Glu Val Met Tyr
173      85      90      95
174 Pro Pro Pro Tyr Leu Asp Asn Glu Lys Ser Asn Gly Thr Ile Ile His
175      100     105     110
176 Val Lys Glu Gln His Phe Cys
177      115
179 <210> SEQ ID NO: 8
180 <211> LENGTH: 119
181 <212> TYPE: PRT
182 <213> ORGANISM: Homo sapiens
184 <400> SEQUENCE: 8
185 Val Lys Gln Ser Pro Met Leu Val Ala Tyr Asp Asn Ala Val Asn Leu
186 1      5      10      15
187 Ser Cys Lys Tyr Ser Tyr Asn Leu Phe Ser Arg Glu Phe Arg Ala Ser
188      20      25      30
189 Leu His Lys Gly Leu Asp Ser Ala Val Glu Val Cys Val Val Tyr Gly
190      35      40      45
191 Asn Tyr Ser Gln Gln Leu Gln Val Tyr Ser Lys Thr Gly Phe Asn Cys
192      50      55      60
193 Asp Gly Lys Leu Gly Asn Glu Ser Val Thr Phe Tyr Leu Gln Asn Leu
194 65      70      75      80
195 Tyr Val Asn Gln Thr Asp Ile Tyr Phe Cys Lys Ile Glu Val Met Tyr
196      85      90      95
197 Pro Pro Pro Tyr Leu Asp Asn Glu Lys Ser Asn Gly Thr Ile Ile His
198      100     105     110
199 Val Lys Glu Lys His Leu Cys
200      115
202 <210> SEQ ID NO: 9
203 <211> LENGTH: 112
204 <212> TYPE: PRT
205 <213> ORGANISM: Mus musculus
207 <400> SEQUENCE: 9
208 Ala Asp His Arg Met Phe Ser Phe His Asn Gly Gly Val Gln Ile Ser
209 1      5      10      15
210 Cys Lys Tyr Pro Asp Ile Val Gln Gln Leu Lys Met Arg Leu Phe Arg
211      20      25      30
212 Glu Arg Glu Val Leu Cys Glu Leu Thr Lys Thr Lys Gly Ser Gly Asn
213      35      40      45
214 Ala Val Ser Ile Lys Asn Pro Met Leu Cys Leu Tyr His Leu Ser Asn
215      50      55      60
216 Asn Ser Val Ser Phe Phe Leu Asn Asn Pro Asp Ser Ser Gln Gly Ser

```

## RAW SEQUENCE LISTING

DATE: 02/21/2007

PATENT APPLICATION: US/10/072,622B

TIME: 13:55:49

Input Set : N:\efs\02\_20\_07\10072622b\_efs\PTO.AMC.txt

Output Set: N:\CRF4\02212007\J072622B.raw

```

217 65          70          75          80
218 Tyr Tyr Phe Cys Ser Leu Ser Ile Phe Asp Pro Pro Pro Phe Gln Glu
219          85          90          95
220 Arg Asn Leu Ser Gly Gly Tyr Leu His Ile Tyr Glu Ser Gln Leu Cys
221          100          105          110
223 <210> SEQ ID NO: 10
224 <211> LENGTH: 111
225 <212> TYPE: PRT
226 <213> ORGANISM: Homo sapiens
228 <400> SEQUENCE: 10
229 Ala Asn Tyr Glu Met Phe Ile Phe His Asn Gly Gly Val Gln Ile Leu
230 1          5          10          15
231 Cys Lys Tyr Pro Asp Ile Val Gln Gln Phe Lys Met Gln Leu Leu Lys
232          20          25          30
233 Gly Gly Gln Ile Leu Cys Asp Leu Thr Lys Thr Lys Gly Ser Gly Asn
234          35          40          45
235 Thr Val Ser Ile Lys Ser Leu Lys Phe Cys His Ser Gln Leu Ser Asn
236          50          55          60
237 Asn Ser Val Ser Phe Phe Leu Tyr Asn Leu Asp His Ser His Ala Asn
238 65          70          75          80
239 Tyr Tyr Phe Cys Asn Leu Ser Ile Phe Asp Pro Pro Pro Phe Lys Val
240          85          90          95
241 Thr Leu Thr Gly Gly Tyr Leu His Ile Tyr Glu Ser Gln Leu Cys
242          100          105          110
244 <210> SEQ ID NO: 11
245 <211> LENGTH: 6
246 <212> TYPE: PRT
247 <213> ORGANISM: Homo sapiens
249 <400> SEQUENCE: 11
250 Met Tyr Pro Pro Pro Tyr
251 1          5
253 <210> SEQ ID NO: 12
254 <211> LENGTH: 199
255 <212> TYPE: PRT
256 <213> ORGANISM: Homo sapiens
258 <400> SEQUENCE: 12
259 Met Lys Ser Gly Leu Trp Tyr Phe Phe Leu Phe Cys Leu Arg Ile Lys
260 1          5          10          15
261 Val Leu Thr Gly Glu Ile Asn Gly Ser Ala Asn Tyr Glu Met Phe Ile
262          20          25          30
263 Phe His Asn Gly Gly Val Gln Ile Leu Cys Lys Tyr Pro Asp Ile Val
264          35          40          45
265 Gln Gln Phe Lys Met Gln Leu Lys Gly Gly Gln Ile Leu Cys Asp
266          50          55          60
267 Leu Thr Lys Thr Lys Gly Ser Gly Asn Thr Val Ser Ile Lys Ser Leu
268 65          70          75          80
269 Lys Phe Cys His Ser Gln Leu Ser Asn Asn Ser Val Ser Phe Phe Leu
270          85          90          95
271 Tyr Asn Leu Asp His Ser His Ala Asn Tyr Tyr Phe Cys Asn Leu Ser

```

**VERIFICATION SUMMARY**

DATE: 02/21/2007

PATENT APPLICATION: US/10/072,622B

TIME: 13:55:50

Input Set : N:\efs\02\_20\_07\10072622b\_efs\PTO.AMC.txt

Output Set: N:\CRF4\02212007\J072622B.raw

**Raw Sequence Listing before editing  
(for reference only)**



IFW16

## RAW SEQUENCE LISTING

DATE: 02/20/2007

PATENT APPLICATION: US/10/072,622B

TIME: 11:20:29

Input Set: N:\efs\02\_20\_07\10072622b\_efs\07039331001sequencelisting.txt

Output Set: N:\CRF4\02202007\J072622B.raw

4 <110> APPLICANT: Chen, Lieping  
 5 Bajorath, Jorgen  
 7 <120> TITLE OF INVENTION: ICOS Mutants  
 9 <130> FILE REFERENCE: 07039-331001  
 11 <140> CURRENT APPLICATION NUMBER: US 10/072,622B  
 12 <141> CURRENT FILING DATE: 2002-02-07  
 14 <160> NUMBER OF SEQ ID NOS: 43  
 16 <170> SOFTWARE: FastSEQ for Windows Version 4.0

Does Not Comply  
 Corrected Diskette Needed

## ERRORED SEQUENCES

618 <210> SEQ ID NO: 43  
 619 <211> LENGTH: 302  
 620 <212> TYPE: PRT  
 621 <213> ORGANISM: Homo sapien  
 E--> 623 <400> SEQUENCE: ①43  
 624 Met Arg Leu Gly Ser Pro Gly Leu Leu Phe Leu Leu Phe Ser Ser Leu  
 625 1 5 10 15  
 626 Arg Ala Asp Thr Gln Glu Lys Glu Val Arg Ala Met Val Gly Ser Asp  
 627 20 25 30  
 628 Val Glu Leu Ser Cys Ala Cys Pro Glu Gly Ser Arg Phe Asp Leu Asn  
 629 35 40 45  
 630 Asp Val Tyr Val Tyr Trp Gln Thr Ser Glu Ser Lys Thr Val Val Thr  
 631 50 55 60  
 632 Tyr His Ile Pro Gln Asn Ser Ser Leu Glu Asn Val Asp Ser Arg Tyr  
 633 65 70 75 80  
 634 Arg Asn Arg Ala Leu Met Ser Pro Ala Gly Met Leu Arg Gly Asp Phe  
 635 85 90 95  
 636 Ser Leu Arg Leu Phe Asn Val Thr Pro Gln Asp Glu Gln Lys Phe His  
 637 100 105 110  
 638 Cys Leu Val Leu Ser Gln Ser Leu Gly Phe Gln Glu Val Leu Ser Val  
 639 115 120 125  
 640 Glu Val Thr Leu His Val Ala Ala Asn Phe Ser Val Pro Val Val Ser  
 641 130 135 140  
 642 Ala Pro His Ser Pro Ser Gln Asp Glu Leu Thr Phe Thr Cys Thr Ser  
 643 145 150 155 160  
 644 Ile Asn Gly Tyr Pro Arg Pro Asn Val Tyr Trp Ile Asn Lys Thr Asp  
 645 165 170 175  
 646 Asn Ser Leu Leu Asp Gln Ala Leu Gln Asn Asp Thr Val Phe Leu Asn  
 647 180 185 190  
 648 Met Arg Gly Leu Tyr Asp Val Val Ser Val Leu Arg Ile Ala Arg Thr  
 649 195 200 205

## RAW SEQUENCE LISTING

DATE: 02/20/2007

PATENT APPLICATION: US/10/072,622B

TIME: 11:20:29

Input Set : N:\efs\02\_20\_07\10072622b\_efs\07039331001sequencelisting.txt

Output Set: N:\CRF4\02202007\J072622B.raw

```
650 Pro Ser Val Asn Ile Gly Cys Cys Ile Glu Asn Val Leu Leu Gln Gln
651      210                      215                      220
652 Asn Leu Thr Val Gly Ser Gln Thr Gly Asn Asp Ile Gly Glu Arg Asp
653 225                      230                      235                      240
654 Lys Ile Thr Glu Asn Pro Val Ser Thr Gly Glu Lys Asn Ala Ala Thr
655      245                      250                      255
656 Trp Ser Ile Leu Ala Val Leu Cys Leu Leu Val Val Val Ala Val Ala
657      260                      265                      270
658 Ile Gly Trp Val Cys Arg Asp Arg Cys Leu Gln His Ser Tyr Ala Gly
659      275                      280                      285
660 Ala Trp Ala Val Ser Pro Glu Thr Glu Leu Thr Gly His Val
```

VERIFICATION SUMMARY

DATE: 02/20/2007

PATENT APPLICATION: US/10/072,622B

TIME: 11:20:30

Input Set : N:\efs\02\_20\_07\10072622b\_efs\07039331001sequencelisting.txt

Output Set: N:\CRF4\02202007\J072622B.raw

L:623 M:212 E: (34) Invalid or duplicate Sequence ID Number, SEQUENCE ID NOS:43 differs:1